

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 59

UNITED STATES PATENT AND TRADEMARK OFFICE

MAILED

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

JUN 27 2002

PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FUMIO ABE
and
KEIJI NODA

Appeal No. 2001-0175
Application No. 08/857,585

HEARD: April 25, 2002

Before KIMLIN, PAK and POTEATE, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 3, 5, 6, 12 and 14, all the claims remaining in the present application. Claim 3 is illustrative:

3. An adsorbent structure comprising:

a honeycomb structure having a periphery and two ends, including a plurality of passages that are defined by partition walls and extend in an axial direction between the ends; and

a composition including (a) high-silica zeolite having a Si/Al atomic ratio of not less than 40 and an alkali metal content of 0.1% by weight or less and (b) a heat-resistant oxide other than zeolite, wherein said heat-resistant oxide is loaded with a noble metal, and said composition is coated on the partition walls.

The examiner relies upon the following references as evidence of obviousness:

Eberly, Jr. et al. (Eberly)	3,591,488	Jul. 6, 1971
Inoue et al. (Inoue)	5,223,236	Jun. 29, 1993
Kawabata et al. (Kawabata) (Japanese Patent Specification)	Hei 2-56247	Feb. 26, 1990

Appellants' claimed invention is directed to an adsorbent structure comprising a honeycomb which has a composition coated on its partition walls. The composition comprises a high-silica zeolite having a Si/Al atomic ratio of not less than 40 and an alkali metal content of 0.1% by weight or less, and a heat-resistant oxide, other than zeolite, that is loaded with a noble metal. According to appellants, "[t]he adsorbent structure of the present structure is particularly effective in the treatment of exhaust gases" (page 3 of principal brief, second paragraph).

Appealed claims 3, 5, 6, 12 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kawabata in view of either Eberly or Inoue.

Appellants submit at page 4 of the principal brief that "[c]laims 3, 5, 6, 12, and 14 stand as a unit." Accordingly, all

Appeal No. 2001-0175
Application No. 08/857,585

the appealed claims stand or fall together with claim 3, and our consideration of this appeal will focus upon the examiner's rejections of claim 3.

We have thoroughly reviewed each of appellants' arguments for patentability, as well as the declaration evidence relied upon in support thereof. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejections for the reasons set forth in the Answer, which we incorporate herein, and we add the following for emphasis only.

Appellants do not dispute the examiner's factual determination that Kawabata, the primary reference, discloses, like appellants, a honeycomb adsorbent structure having a coating comprising a high silica zeolite and a noble metal-loaded heat resistant oxide. There is also general agreement that Kawabata is silent regarding the Si/Al ratio in the zeolite. However, as properly pointed out by the examiner, Eberly provides the general teaching that it was known in the art that zeolites having the presently claimed high silica/alumina ratios, not less than 40, are suitable for high temperature conversions inasmuch as they

exhibit increased thermal stability (see column 2, lines 40-44 and column 5, lines 2-5). In addition, the examiner cites Inoue's teaching of using a high silica zeolite with a silica/alumina ratio greater than 20 for treating and cleaning exhaust gases. Accordingly, based on the teachings of the applied prior art, we are satisfied that the examiner has properly found that it would have been obvious for one of ordinary skill in the art to employ the zeolite-coated honeycomb structure of Kawabata wherein the silica/alumina ratio is not less than 40 with the expectation that the honeycomb structure would serve as an adsorbent having stability to heat, steam and acid. We note that Eberly teaches that, more preferably, the silica/alumina ratio is greater than about 50.

The principal argument advanced by appellants is that one of ordinary skill in the art would not have looked to Eberly, which is directed to a catalyst in the field of oil reforming, for modifying the adsorbent of Kawabata, which is directed to an adsorbent for exhaust gases. According to appellants, whereas Eberly is restricted to hydrocarbon conversions, "[a]utomobile exhaust gas contains a mixture of various components including hydrocarbons, CO, O₂, CO₂, N₂, H₂O, and the like with the

Appeal No. 2001-0175
Application No. 08/857,585

composition of the mixture always undergoing change" (page 7 of principal brief, last paragraph).

We are not persuaded by appellants' argument inasmuch as we agree with the examiner that Eberly is not confined to the field of oil reforming. As pointed out by the examiner, Eberly provides the general teaching that "[i]t has been found that for general catalytic or adsorptive uses, the aluminosilicate zeolites having higher silica to alumina ratios will be preferred due to their higher stability" (column 2, lines 39-42, emphasis added). Furthermore, appellants' argument is not particularly germane to the claimed subject matter on appeal inasmuch as appellants' claims broadly define an adsorbent structure having no specific utility, but are not directed to a process for adsorbing gas from an exhaust.

It is also pointed out by appellants that "the retention of a high BET, that is, a specific surface area at a high temperature is also influenced by the alkali metal content of the zeolite" (page 10 of principal brief, last paragraph). However, as explained by the examiner, the claimed alkali metal content of 0.1% by weight or less encompasses 0%. Accordingly, the appealed claims do not require any amount of alkali metal. This is in

Appeal No. 2001-0175
Application No. 08/857,585

accord with the disclosure at page 11 of the specification.

Also, the appealed claims do not recite any value for BET.

Appellants' only argument regarding Inoue is that the reference "does not teach or suggest the need to control both the Si/Al ratio and the alkali metal content in the zeolite to give effective results for appellants' intended use" (page 12 of principal brief). Again, we do not find that this argument is relevant to the presently claimed subject matter. Appellants are not claiming any process of controlling the silica/alumina ratio or the alkali metal content, and no intended use is recited. Moreover, Inoue's teaching of having a silica/alumina mole ratio of not less than 20 would suggest controlling the ratio. Also, appellants acknowledge that Eberly describes an alkali metal content in the claimed amount (see page 11 of the principal brief, first paragraph). Also, appellants state that they "agree with the Examiner that the primary reference [Kawabata] teaches a possible inclusion of an alkali metal in zeolite" (page 13 of principal brief, last paragraph).

Appellants contend that the Declaration of Ms. Naomi Noda, as well as the Table at page 22 of the specification, establish patentability insofar as they demonstrate insufficient thermal stability for a zeolite having a Si/Al ratio of 25, which is

Appeal No. 2001-0175
Application No. 08/857,585

below the claimed ratio (see page 15 of principal brief). However, inasmuch as Eberly specifically teaches that zeolites having a silica/alumina ratio of greater than 40 impart greater stability to heat, steam and acid, it can hardly be said that the Declaration and specification results would be considered unexpected by one of ordinary skill in the art. Significantly, we note that Declarant Noda does not characterize the results of the Declaration as unexpected.

As a final point, we disagree with appellants that "[a] major issue in the appeal is whether one of ordinary skill in the art would seek to modify the ratio of silica to alumina disclosed in the primary reference with a higher ratio disclosed in the secondary reference" (page 1 of Reply Brief, last paragraph). The issue is not modification of the primary reference since Kawabata is silent regarding the silica/alumina ratio. The issue is, in the face of such silence, would one of ordinary skill in the art select the claimed ratio for the purpose of attaining greater stability to heat, steam and acid. We find that the prior art applied by the examiner provides an answer in the affirmative.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is affirmed.

Appeal No. 2001-0175
Application No. 08/857,585

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Edward Kimlin

EDWARD C. KIMLIN)
Administrative Patent Judge)

Chung K. Pak)
CHUNG K. PAK) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
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Appeal No. 2001-0175
Application No. 08/857,585

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